DOCUMENT RESUME

ED 172 881 JC 790 424

TITLE	Instructional Facility Utilization.
INSTITUTION	Kalamazoo Valley Community Coll., Mich.
PUB DATE	Jun 79
NOTE	26p.
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Classrooms; Class Size; Community Colleges; *Facility Utilization Research; *Junior Colleges; Laboratories; School Space; *Space Classification; *Space Utilization

ABSTRACT

Data describing campus facility use for instructional and related purposes for one week of activity in Fall 1978 were collected and evaluated at Kalamazoo Valley Community College. Four measures of space utilization were used: (1) percent of available time used; (2) percent of available space used; (3) percent of scheduled space utilized; and (4) percent of scheduled capacity utilized. Rooms were categorized as classroom, standard laboratory, open (free-access) laboratory, and combination laboratory (with multiple use). Three time blocks were established: Block 1 included Monday (M) through Friday, 8 a.m. to 4 p.m. and M through Thursday (T), 6 p.m. to 10 p.m.; Block 2 included M through T, 4 p.m. to 6 p.m.; and Block 3 included Saturday, 8 a.m. to 12 a.m. Time use was recorded in minutes. Percentages were computed by comparing the minutes the rooms were available in each of the time blocks to the minutes actually scheduled, and by computing room enrollment capacities with enrollment figures. Results indicated that open laboratories had the highest percentage of utilization of available minutes (83.2%). Standard laboratories had the lowest utilization rate (37.2%). Combination labs had the highest design (enrollment) utilization (80%), standard laboratories ranked second (72.6%), and classrooms ranked third (50.2%). Time Block 2 had between 5% and 6% utilization for classrooms and standard laboratories. (DR)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED172881

Instructional Facility Utilization
028/79

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Nancy A. Woods

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Office of Institutional and Management Studies

KALAMAZOO VALLEY COMMUNITY COLLEGE
Kalamazoo, Michigan

June 1979

JC 790 424

Purpose

The purpose of this study was to identify data elements and calculate facility use for instructional and related purposes for one week of activity during the 1978 fall semester.

General Background

A system for determining and reporting instructional facilities utilization was incorporated into the design of the College's management information system in April 1978. Specifically, a report entitled "Instructional Room Use Summary" was designed as one of three basic reports within the Facilities Inventory and Utilization subsystem. That report was intended to indicate utilization in terms of one week of scheduled direct instructional activity. Although the system is functional, data output was found to be unreliable. Several factors that affect input data need resolution before a high level of reliability can be attained. Due to this situation, it was decided to design and conduct a special study of instructional facility utilization. Noted throughout this report are various problems encountered in obtaining reliable data for the present study, which would require solution before an automated subsystem could be relied upon.

Establishment of Standards

One problem which required resolution at the beginning of the study was the establishment of standards against which actual room utilization could be assessed. After considerable discussion and review of existing data elements, a series of decisions were made which established the standards to be used. First, it was decided that the period of time used for the investigation would

consist of the week during which the first official enrollment count date fell during the Fall semester, 1978. Fall semesters have historically represented the semester of highest enrollments. The first count date of that semester also has historically shown the largest enrollments of any count date. It was considered beneficial to use the week during which the count date fell since some data elements could be independently verified for that date. Other time periods or other count dates during the same semester could be expected to produce a different configuration of room utilization data. For example, Sunday College was not scheduled during the week under investigation: therefore there was no instructional use of facilities on Sunday in this study. Whether the choice of a different time period would increase or decrease overall room utilization is unknown.

The second set of standards which were established determined the time blocks of each day, or combination of days, used to categorize and analyze utilization rates. The time blocks established were:

BLOCK 1: Monday through Friday 8am to 4pm
AND Monday through Thursday 6pm to 10pm

Total Minutes = 3,360

BLOCK 2: Monday through Thursday 4pm to 6pm

Total Minutes = 480

BLOCK 3: Saturday 8am to 12 noon

Total Minutes = 240

BLOCK 4: Sunday 1pm to 4pm

Total Minutes = 180

Because Sunday College was not scheduled during the period under investigation,

Block 4 was not used. Block 2 was changed to include Friday from 4pm to 5pm after discovering that open laboratories utilized this time. Block 2 then yielded a total of 540 minutes.

The rationale for these time blocks was that the College, and the community, can reasonably expect classes to be held weekdays during the day and evening. The weekday 4pm to 6pm block was considered to encompass the dinner hour, and traditionally has not been heavily scheduled due to this factor, although some classes are occasionally scheduled at this time. Friday evening was not included as classes are not scheduled then. Saturday morning was also considered a time during which classes could reasonably be expected to be scheduled, but one which usually requires the scheduling of a different type of class than is normally scheduled on other days.

The third decision concerned categorization of space. It was decided that utilization could best be determined on an individual room basis. A review of the facilities room inventory allowed identification of each room used for direct instructional purposes for the period under study.

Subsequent aggregation of individual room utilization data was based on the classroom/laboratory distinction made in the facilities room inventory and the additional designation of laboratories as standard, open or some combination of standard and open, as indicated by the Dean of Instruction. The gymnasium and pool were analyzed independently, due to their specialized functions.

Finally, a format for standard analysis was established and resulted in four basic measures of space utilization. The measures are:

1. Percent of available time utilized.
2. Percent of available space utilized.
3. Percent of scheduled space utilized.
4. Percent of scheduled capacity utilized.

In this summary report, only the first two measures are included. The other data has been retained and may be useful in other kinds of analysis in the future.

Data Collection

Having established the standards to be used in assessing instructional room utilization, the next problem became obtaining reliable data to produce the desired percent utilization figures.

The primary source of data was a report which identified sections, room assignment, days and times of class meetings, and maximum and actual enrollments. Since the section master file which stores these data is amended throughout a given semester, it was necessary to located data regarding these elements as of the September 8, 1978, count date. This report was provided by the Director of Records and Registration. Adjustments were made so that the data actually utilized matched that given for the count date.

The only data element which could be carried throughout the study as a check point for accuracy was the total headcount enrollment as of September 8 count date. The number of classes were tabulated by hand, as totals given on the report did not include classes such as labs, which have no independent section number, and totals did include cancelled sections, which were not included in this study.

Detail data sheets were prepared for each identified room. These sheets presented the time periods, days, maximum seats, and actual headcount enrollment for each class meeting scheduled in the room. A "class meeting" encompassed both identified sections and labs associated with those sections. Headcount enrollments in lab class meetings were assumed to be the same as those for the associated course section number.

The detail data for each class meeting was aggregated first for each day of the week, by the established time blocks, and then for the time blocks themselves.

The Instructional Administrative Assistant prepares, for each semester, individual room charts which show the courses scheduled and the time period scheduled. These room charts were used as a secondary source to verify the data used. Several discrepencies were found, which were resolved by reviewing each discrepency with the Dean of Instruction. In most instances, a course had been moved from one room to another without subsequent completion of a change form for Data Processing. Data were realligned to reveal what actually took place in each room.

An additional problem was presented by class meetings which were recorded TBA (to be announced) under class meeting time, meeting days, or room number. These TBA classes were also reviewed with the Dean of Instruction, and were resolved as either independent study classes, self-paced classes, +20 classes, or lab classes using the open strategy. The open lab classes were subsequently included in the analysis, and the other classes were dropped from the study. The effects of dropping independent study, self-paced and +20 classes from the analysis, in terms of reduction in the headcount enrollment as of the September 8 count date were:

	Enrollment
Count Date Headcount	13,058
Off-campus Headcount	401
Self-paced Headcount	56
Independent Study Headcount	52
+20 Headcount	87
Total Headcount used in this Study	12,462

The reader will note that the headcount enrollment data above represents duplicated headcount. For purposes of this study, headcount was duplicated further still, as students were counted once in each class meeting time, not once in each course. The 12,462 total headcount enrollment figure is verifiable only on the room by room detail sheets.

Finally, the accurate measurement of student enrollment in open labs presented, and remains, a problem. Data pertaining to students enrolled could not be accurately computed for rooms which housed open laboratories, or for the open lab portion of rooms which housed a combination of standard and open labs. In some instances, labs are open to all students on a drop-in basis. Section enrollments, in such cases, represent only a small portion of actual utilization. In other instances, labs were open for student use during more than one standard time block, and no method was available for independently verifying actual student use of the lab during individual time blocks. For open labs, therefore, only data pertaining to percent utilization of available minutes is presented.

Summary Data

The following pages present data aggregated by room category for each of the four building designations: Redwood, Butler, Main and Gym Complex. An additional page presents grand totals for each room category. Also included are data regarding use of the gym and pool for College scheduled, non-class activities in those facilities.

As stated earlier, the room categories are classroom, standard laboratory, open laboratory, and a combination laboratory in which both standard and open labs were scheduled. Rooms were designated in each of these categories using

the process described on page 3 of this report. It should be noted that the designation of a room as a laboratory does not infer that all classes scheduled in those rooms were lab portions of other courses. Appendix A provides a breakdown of the number of sections scheduled in laboratories which were: 1) labs designated as such in the Fall 1978 section master files, or, 2) classes scheduled in a laboratory which were not designated as labs in the Fall 1978 section master files.

The data provided measure two items. The first, minutes, is measured by comparison of the minutes the rooms were available in each predetermined time block, to the minutes the rooms were actually scheduled. For example, there were 17 rooms designated as classrooms in Redwood Building. For the first block of time, the standard minutes were 57,120, or 3,360 minutes times 17 rooms. The actual minutes those same 17 classrooms were in use during the first time block were 20,870, yielding a percentage utilization of 36.5%. This process was repeated for each time block and room category.

The second data item, students enrolled, provides an indication of the degree to which rooms were filled to design capacity during the times classes were scheduled. The standard students enrolled data were obtained by multiplying the design capacity of each room by the number of class meetings scheduled in that room. These individual room standards were then summed to obtain the standard for each room type. The actual students enrolled data were obtained from headcount enrollment figures for all class meetings scheduled in each room, again summed for each room type. For example, the 17 classrooms in Redwood Building had a total design capacity of 10,892 for all class meetings scheduled during the first time block. These same classes enrolled a total of 6,178 students,

yielding a percentage utilization of 56.7%. This process was repeated for each time block and room type.

The following points can be drawn from data regarding the entire campus, with the exclusion of the gymnasium and pool:

1. Open labs had the highest percent utilization of available minutes, with 83.2%.

2. Standard labs had the lowest percent utilization of available minutes, with 37.2%.

3. Combination labs and classrooms had similar utilization of minutes, with 53.8% and 50.2%, respectively.

4. The standard portion of combination labs had the highest utilization of design capacity (80.0%), even though the actual students enrolled in standard lab portions of combination labs was the lowest figure for any room category.

5. Standard labs ranked second in the percent utilization of design capacity, with 72.6%, and classrooms ranked third, with 50.2%.

6. Minutes in the second time block were utilized about as expected for classrooms and standard labs, with between 5% and 6% utilization. For open labs, and open lab portions of standard labs, however, minutes utilization was much higher than anticipated (78.9% and 43.8%, respectively). This would indicate the weekday 4pm to 6pm time block is required in order to accomodate open lab time requirements.

7. Saturday minutes, the third time block, were not used at all for standard laboratories, or the standard portion of combination labs.

A comparison of the data pertaining to Redwood and Main buildings revealed the following points:

1. Redwood classrooms used less of the available time than did Main classrooms, but Redwood showed a higher utilization of design capacity.

2. The percent utilization of minutes and design capacity were nearly identical for standard labs in the first time block. In the second time block, Main had a higher utilization of design capacity, and Redwood had a higher utilization of minutes. Only 1 room in Redwood was a standard lab, however, compared to 15 in Main.

3. Open labs in Redwood showed a higher utilization of minutes in all 3 time blocks, and the same held true for combination labs.

4. Main had a higher percent utilization of design capacity in the standard lab portion of combination labs than Redwood.

ENTIRE CAMPUS (excludes gym and pool) Total Instructional Rooms: 64

	Mon. thru Fri. 8am to 4pm and Mon. thru Thur. 6pm to 10pm			Mon. thru Thur. 4pm to 6pm and Fri. 4pm to 5pm			Saturday 8am to 12 noon		
	Standard	Actual	% Util.	Standard	Actual	% Util.	Standard	Actual	% Util.
35 CLASSROOMS:									
Minutes	117,600	49,325	41.9	18,900	1,065	5.6	8,400	450	5.4
Students Enrolled	33,736	16,941	50.2	320	288	90.0	156	58	37.2
17 STANDARD LABORATORIES:									
Minutes	57,120	21,270	37.2	9,180	500	5.4	4,080	-0-	
Students Enrolled	4,854	3,526	72.6	144	101	70.1			
5 OPEN LABORATORIES:									
Minutes	16,800	13,980	83.2	2,700	2,130	78.9	1,200	900	75.0
7 COMBINATION LABORATORIES:									
Standard Portion--									
Minutes	23,520	5,715	24.3	3,780	-0-		1,680	-0-	
Students Enrolled	1,012	769	80.0						
Open Portion--									
Minutes	23,520	6,945	29.5	3,780	1,660	43.9	1,680	180	10.7

10.

Building: REDWOOD Total Instructional Rooms: 24

	Mon. thru Fri. 8am to 4pm and Mon. thru Thur. 6pm to 10pm			Mon.thru Thur. 4pm to 6pm and Fri. 4pm to 5pm			Saturday 8am to 12 noon		
	Standard	Actual	% Util.	Standard	Actual	% Util.	Standard	Actual	% Util.
17 CLASSROOMS:									
Minutes	57,120	20,870	36.5	9,180	800	8.7	4,080	-0-	
Students Enrolled	10,892	6,178	56.7	240	240	100.0			
1 STANDARD LABORATORY:									
Minutes	3,360	1,300	38.7	540	400	74.1	240	-0-	
Students Enrolled	540	400	74.1	120	70	58.3			
3 OPEN LABORATORIES:									
Minutes	10,080	9,300	92.3	1,620	1,620	100.0	720	720	100.0
3 COMBINATION LABORATORIES:									
Standard Portion--									
Minutes	10,080	2,330	23.1	1,620	-0-		720	-0-	
Students Enrolled	498	319	64.0						
Open Portion--									
Minutes	10,080	4,020	39.9	1,620	1,180	72.8	720	180	25.0

11.

Building: BUTLER Total Instructional Rooms: 2

	Mon. thru Fri. 8am to 4pm and Mon. thru Thur. 6pm to 10pm			Mon. thru Thur. 4pm to 6pm and Fri. 4pm to 5pm			Saturday 8am to 12 noon		
	Standard	Actual	% Util.	Standard	Actual	% Util.	Standard	Actual	% Uti..
1 CLASSROOM:									
Minutes	3,360	1,370	40.8	540	-0-		240	-0-	
Students Enrolled	408	434	106.4						
1 STANDARD LABORATORY:									
Minutes	3,360	600	17.8	540	-0-		240	-0-	
Students Enrolled	96	70	72.9						

Building: MAIN Total Instructional Rooms: 37

	Mon. thru Fri. 8am to 4pm and Mon. thru Thur. 6pm to 10pm			Mon. thru Thur. 4pm to 6pm and Fri. 4pm to 5pm			Saturday 8am to 12 noon		
	Standard	Actual	% Util.	Standard	Actual	% Util.	Standard	Actual	% Util.
16 CLASSROOMS:									
Minutes	53,760	26,195	48.7	8,640	265	3.1	3,840	300	7.8
Students Enrolled	22,036	10,108	45.9	80	48	60.0	116	32	27.6
15 STANDARD LABORATORIES:									
Minutes	50,400	19,370	38.4	8,100	100	1.2	3,600	-0-	
Students Enrolled	4,218	3,056	72.4	24	31	129.2			
2 OPEN LABORATORIES:									
Minutes	6,720	4,680	69.6	1,080	510	47.2	480	180	37.5
4 COMBINATION LABORATORIES:									
Standard Portion--									
Minutes	13,440	3,385	25.2	2,160	-0-		960	-0-	
Students Enrolled	514	450	87.5						
Open Portion--									
Minutes	13,440	2,925	21.8	2,160	480	22.2	960	-0-	

13.

Building: GYM COMPLEX Total Instructional Rooms: 3

	Mon. thru Fri. 8am to 4pm and Mon. thru Thur. 5pm to 10pm			Mon. thru Thur. 4pm to 6pm and Fri. 4pm to 5pm			Saturday 8am to 12 noon		
	Standard	Actual	% Util.	Standard	Actual	% Util.	Standard	Actual	% Util.
1 CLASSROOM:									
Minutes	3,360	890	26.5	540	-0-		240	150	62.5
Students Enrolled	400	221	55.2				40	26	65.0
POOL:									
Minutes	3,360	300	8.9	540	-0-		240	-0-	
Students Enrolled	120	108	90.0						
GYMNASIUM:									
Minutes	3,360	1,630	48.5	540	-0-		240	-0-	
Students Enrolled	1,728	570	33.0						

NOTE: The gymnasium was also used for the Athletic Program from 3:30pm to 6:00 pm, Tuesday, Wednesday and Thursday, for a total of 450 minutes. Additionally, the maintenance department must schedule cleaning time in the gym, which precludes other activities. These times were from 3:30 pm to 12 midnight on Friday, and from 7:30am to 12 noon on Saturday, for a total of 780 minutes, 330 of which would be covered by the standard time blocks.

14.

Conclusions

Available literature regarding instructional facility utilization in higher education was reviewed to determine if normative data existed which could be used as a basis for evaluation. Almost all of the documents located were oriented toward planning for new facilities. Data were not evaluative in nature, but tended to reflect acceptable standards in facilities planning, such as the average square feet of a classroom space per FTE student. One document, the Western Interstate Commission for Higher Education (WICHE) manuals for facilities planning and management, spoke to evaluation of facility use, but states the manual users should establish utilization rates as a matter of institutional policy, and does not provide a comparison base.

An instructional facility utilization report prepared by Macomb County Community College (1975) reflected the use of individual instructional spaces during various time periods, but did not evaluate the extent of space utilization relative to design or scheduled capacity. It was interesting to note that Macomb County Community College investigators experienced very similar problems in obtaining reliable data for their study. Computer-stored data were not updated, standards for room capacity were not established, cancelled sections had to be sorted by hand, and so forth. A conversation with the Macomb project manager revealed that standards have not been established, data reliability problems still exist, no changes were made based on study findings, and the investigation has not been repeated.

College records were also reviewed to determine if an historical base was available which could be used for evaluative purposes. No data were found

which could be compared to that prepared for this study. Previously prepared data were not adequately notated to reflect the data sources, time period under investigation, reliability and verifiability of data, etc.

One internal document, the Audit Report from the Michigan Office of the Auditor General, for the period July 1, 1973 through September 30, 1974, does contain data which may be useful even though the data are not comparable, and a recommendation. The Audit Report section entitled "Space Utilization" is attached as Appendix B.

It appears that this investigation represents an analysis new not only to this College but also to higher education in general. In the past, the constant growth in college enrollments necessitated an emphasis on facilities planning within that growth environment. Given the current diminishing growth or no-growth environment in higher education, and the emphasis on efficient management of existing resources, the methodologies and statistics used previously are not sufficient. The admonition from the Western Interstate Commission for Higher Education for institutions to establish their own definitions of acceptable and unacceptable utilization rates may be the only course open to the College at this time. This is a difficult and formidable task. However, it appears to be a task worth serious consideration if sound evaluative judgements regarding efficient and effective use of facilities are to be made.

Appendix A

Laboratory Use

Room No.	Name	Classes Designated as Labs[1].	Other Classes[2].
Redwood:			
01-02	Photography Lab	5	6
39	Math Lab	-	3
55	Typing Lab	2	9
60	Typing Lab	-	6
61	Art Lab (ceramics)	5	5
72-73	Alpha English Lab	-	3
78	Art Lab	6	6
	Redwood Subtotal:	18	38
Butler:			
63	Construction Lab	2	-
Main:			
1015	Dental Lab	4	9
1016	Dental Lab	3	-
1042	Physics Lab	6	-
1044	Physics Lab	7	2
1045	Electronics Lab	2	4
1047	Electronics Lab	3	4
2507	Music Lab	-	7
2509	Piano Lab	-	2
3000	Data Processing Lab	2	-
3004	Biology Lab	8	4
3010	Biology Lab	12	-

Room No.	Name	Classes Designated as Labs[1].	Other Classes[2].
4020-21	Nursing Lab	-	-
4023	Drafting Lab	8	9
4024	Drafting Lab	8	9
5014	Environmental Control Lab	2	9
6000	Chemistry Lab	-	7
6001	Chemistry Lab	3	1
6005	Metalurgy Lab	-	9
6007	Welding Lab	7	-
6008	Machine Tool Lab	4	-
6011	Auto Lab	8	-
	Main Subtotal:	87	76
	Grand Total:	107	114

1. These are classes which are designated "LAB" in the Fall 1978 section master files.

2. These are classes which were not designated "LAB" in the Fall 1978 section master file.

UNIVERSITY OF CALIF.
LOS ANGELES
AUG 24 1979
CLEARINGHOUSE FOR
JUNIOR COLLEGES

Appendix B

AUDIT REPORT
July 1, 1973 through September 30, 1974

Space Utilization

49. "We reviewed the use of available space during the fall semester of 1974. Usage was as follows:

Type of Room	Number of Rooms	Average Hours Used Per Week
Classrooms	39	29.95
Lecture Rooms	3	32.67
Laboratories	27	19.44
Total	69	25.96

The college has a normal operating schedule from 8 a.m. to 10:15 p.m. Monday through Thursday, 8 a.m. to 5 p.m. Friday, and 8 a.m. to 12 noon Saturday. Classes are scheduled on a modular basis. For each 16 week semester, courses are scheduled for 16, 12, 8, and 4 week periods. Any room used for fewer than eight weeks at a particular time interval is not included in our computation as being used. Rooms used for eight weeks or more are included in our computations as being fully used. Our computations do not include unscheduled use of rooms by students for tutoring, remedial classes, open laboratories, or the use of rooms for community services. . ."

"We recommend that, in addition to potentials for growth, the level of utilization of present facilities be thoroughly reviewed and fully considered prior to the construction of new classroom facilities and that the existing and potential utilization be specifically documented."